CDP Uniformed Services University

CDP Presents A Monthly Webinar Series

Integrated Treatment Approaches to Treat Comorbid PTSD and History of TBI

Presenter:

Amy J. Jak, Ph.D.

Upcoming Training & Events

Before We Get Started in:

01:00:00

Q & A – You can submit a question via chat at any point during the presentation. Questions will be answered during or during the last 10 minutes of the program. While chatting, please select "Everyone" in chat so all can see your comments and questions!

Resources – You can find a presentation PDF and additional resources on your CE21 account page.

Dial In for Audio (only if having audio problems)
Stay Logged In! Dial **646-876-9923** Meeting #875 8925 8535
Help – for assistance, please e-mail Micah Norgard at micah.norgard.ctr@usuhs.edu

1

CDP Uniformed Services University

CDP Presents A Monthly Webinar Series

Integrated Treatment Approaches to Treat Comorbid PTSD and History of TBI

Presenter:

Amy J. Jak, Ph.D.

To receive credit, you must attend the webinar all the way through the Q & A section at the end of the presentation.

Please do NOT leave the webinar!

2

Disclaimer

The views expressed are those of the presenter and do not necessarily reflect the opinions of the Uniformed Services University of the Health Sciences, the Department of Defense, or the U.S. Government.

CDP Uniformed Services University

3

3

CDP Uniformed Services University

CDP Presents A Monthly Webinar Series

Integrated Treatment Approaches to Treat Comorbid PTSD and History of TBI

CDP Presents

Monthly Webinar Series

★

SAVE THE DATE

2023

March 16th	**Integrated Treatment Approaches to Treat Comorbid PTSD and History of TBI** Presented by Dr. Amy Jak
April 5th	**Healing Racial Trauma: Strategies for Children, Teens, and their Families** Presented by Drs. Christi Culpepper, and Jamila Ray
May 2nd	**Self-Help Plus: A Cost-Effective, Scalable, Evidence-Based Stress Management Course** Presented by Dr. Teresa Au
June 28th	**A Quick Walk Through the New VA/DoD Clinical Practice Guidelines for PTSD** Presented by Dr. David Riggs
July 25th	**Nonsuicidal Self-Injurious Behaviors in Military Kids and Teens** Presenter TBD...stay tuned!
September 14th	**Nonprofit Spotlight: Stop Soldier Suicide** Presented by Dr. Sonja Batten
October 11th	**Sleep Survival: How to Manage Poor Sleep Opportunities** Presented by Drs. Maegan M. Paxton Willing, Diana Dolan
November & December	***TBD...stay tuned!***

To register for these webinars and other upcoming training events, visit https://deploymentpsych.org/training

4

CDP Uniformed Services University

CDP Presents A Monthly Webinar Series

Integrated Treatment Approaches to Treat Comorbid PTSD and History of TBI

Upcoming Training Events:

Online Cognitive Processing Therapy (CPT) Training via Second Life	March 22nd and 23rd
Online Acceptance and Commitment Therapy (ACT) Training Online via Zoom	March 27th and 28th
Online Cognitive Behavioral Therapy for Suicide Prevention (CBT-SP) Training via Zoom	April 3rd and 4th
CDP Presents: Healing Racial Trauma: Strategies for Children, Teens, and Their Family via Zoom	April 5th
Online Cognitive Behavioral Therapy for Insomnia (CBT-I) Training via Zoom	April 10th and 11th

Register now for these upcoming trainings:
www.deploymentpsych.org/trainings

CDP Uniformed Services University

5

5

CDP Uniformed Services University

CDP Presents A Monthly Webinar Series

Integrated Treatment Approaches to Treat Comorbid PTSD and History of TBI

Training on Assessment of PTSD and Suicide Risk Management in Veterans

National Center for PTSD | PTSD Consultation Program for Providers Who Treat Veterans | Supporting Providers Who Serve Veterans | CDP Uniformed Services University

May 3-4 and July 19-20
10:00 AM – 6:30 PM Eastern time
14 FREE Credits

Target Audience:
Licensed behavioral health providers who regularly treat U.S. Veterans (or who intend to treat U.S. Veterans) in the community can apply. This training is **NOT** intended for behavioral healthcare providers working in **VA or DoD** settings.

Register now for the training:
https://deploymentpsych.org/TAPTSDSRMV

6

CDP Uniformed Services University

CDP Presents A Monthly Webinar Series

Integrated Treatment Approaches to Treat Comorbid PTSD and History of TBI

ANSWERING THE CALL
with Focus, Flexibility, and Fidelity:
Implementing EBPs in the Wake of Public Health Crises

Evidence-Based Psychotherapy Conference, May 11, 2023
Pre-Meeting Institute EBP Workshops, May 9-10, 2023

Pre-meeting EBP workshops include:
- Motivational Interviewing Skills
- Acceptance and Commitment Therapy
- CBT for Chronic Pain
- $45 Total for Conference + 2-day PMI

Keynote: George Bonanno, Ph.D.
Columbia University

Trauma and the Resilience Paradox:
Adaptation Through Flexible Self-regulation

Workforce Capacity and Wellbeing in U.S. Psychologists Karen Stamm, Ph.D., American Psychological Association
Vulnerable Populations & Collective Trauma Ingrid Cockhren, M.Ed., PACEs Connection
Trauma-Informed & Culturally Sensitive Therapy with Ethnic Populations Priscilla Dass-Brailesford, Ph.D., Georgetown University School of Medicine
A Stepped Care Framework to Support Recovery after a Mass Casualty Event Lisa Brown, Ph.D., ABPP Palo Alto University, Stanford University
Approaches to Transdiagnostic Care with the Special Operations Forces Community Lauren Brenner, Ph.D., Massachusetts General Hospital
Modified CREST for the Treatment of Hoarding Disorder in Veterans During COVID Julie Holcomb, M.S. & Chad Vacco, M.A., Dept of Veterans Affairs

$20 registration

Register now for the conference:
www.deploymentpsych.org/EBPConference

7

CDP Uniformed Services University

CDP Presents A Monthly Webinar Series

Integrated Treatment Approaches to Treat Comorbid PTSD and History of TBI

Sorry We Missed You!

We have you covered!
Check out last month's series:

Eating Disorders: General and Military-Relevant Considerations

I really appreciated this training. As a military wife and mother who is also a therapist, the intersection of disordered eating and the military made me reconsider some interactions.

I always enjoy the trainings provided by CDP.

Webinars always of excellent quality with training for immediate applications of content.

Watch Archived CDP Presents Webinars at
https://deploymentpsych.org/archived-webinars

8

CDP's Official PODCAST

Practical For Your Practice

Listen on Apple Podcasts · Spotify · Listen on Google Podcasts

9

Enhancing Your Experience

Best [illegible] headset

CDP
Uniformed Services University

10

10

CDP Uniformed Services University

CDP Presents A Monthly Webinar Series

Integrated Treatment Approaches to Treat Comorbid PTSD and History of TBI

Presenter:

Amy J. Jak, Ph.D.
Professor of Psychiatry
UC San Diego School of Medicine
Staff Neuropsychologist, VA San Diego healthcare system

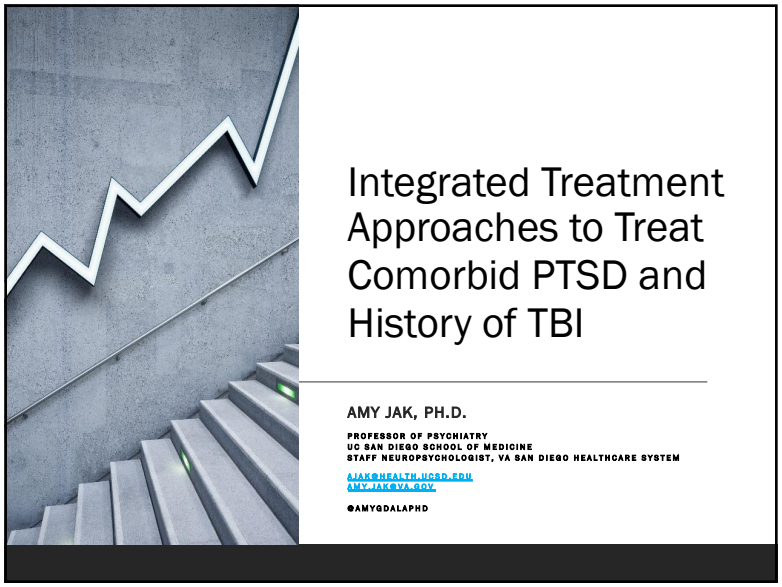
11

Disclosures

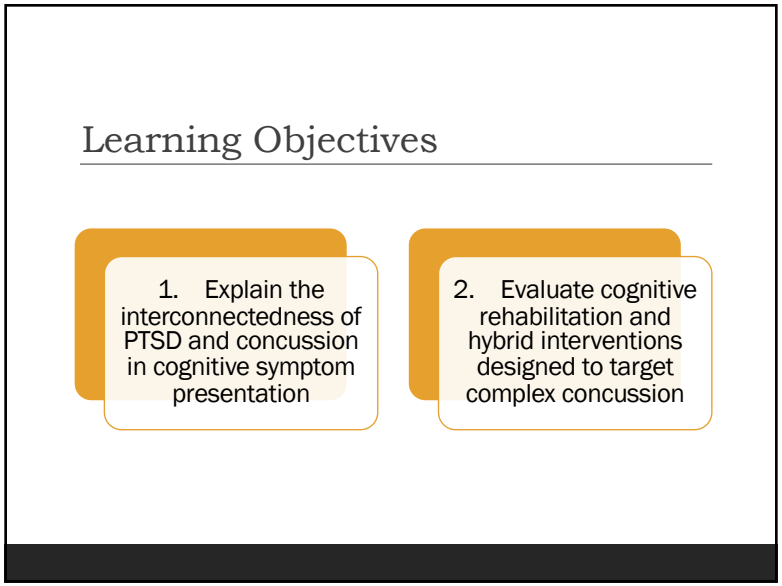
All faculty, course directors, planning committee, content reviewers and others involved in content development are required to disclose any financial relationships with commercial interests. Any potential conflicts were resolved during the content review, prior to the beginning of the activity.

Dr. Jak has no financial interests to disclose.

12


Integrated Treatment Approaches to Treat Comorbid PTSD and History of TBI
AMY JAK, PH.D.
PROFESSOR OF PSYCHIATRY
UC SAN DIEGO SCHOOL OF MEDICINE
STAFF NEUROPSYCHOLOGIST, VA SAN DIEGO HEALTHCARE SYSTEM
AJAK@HEALTH.UCSD.EDU
AMY.JAK@VA.GOV
@AMYGDALAPHD

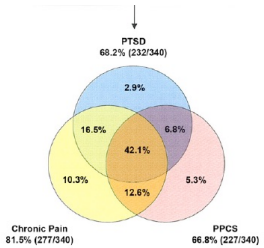
13


Learning Objectives
1. Explain the interconnectedness of PTSD and concussion in cognitive symptom presentation
2. Evaluate cognitive rehabilitation and hybrid interventions designed to target complex concussion

14

Comorbidity is the Signature

TBI has been characterized considered a 'signature wound' of the wars in Iraq and Afghanistan but *comorbid* presentations with history of mTBI are the most common



Lew et al., 2009

15

Criteria for Severity of TBI

(If a patient meets criteria in more than one category of severity, the higher severity level is assigned)			
Criteria	**Mild**	**Moderate**	**Severe**
Structural imaging	Normal	Normal or abnormal	Normal or abnormal
Loss of Consciousness (LOC)	0-30 min	>30 min and <24 hours	>24 hours
Alteration of consciousness/ mental state (AOC)*	up to 24 hours	>24 hours; severity based on other criteria	
Posttraumatic amnesia (PTA)	0-1 day	>1 and <7 days	>7 days
Glasgow Coma Scale (GCS) (best available score in first 24 hours)**	13-15	9-12	<9

85%

*Alteration of mental status must be immediately related to the trauma to the head. Typical symptoms would be looking and feeling dazed and uncertain of what is happening, confusion, and difficulty thinking clearly or responding appropriately to mental status questions, and being unable to describe events immediately before or after the trauma event.
**In April 2015, the DoD released a memorandum recommending against the use of GCS scores to diagnose TBI. See the memorandum for additional information.[3]

16

TBI Course

Barring any intervening causes, the trajectory of recovery of cognitive symptoms is improvement or plateau

Recovery is 9-12 months following moderate – severe TBI

In the majority of cases, cognitive symptoms of mild TBI resolve within 7-10 days

Sidebar 3: Possible Post-mTBI Related Symptoms***		
Physical Symptoms: Headache, dizziness, balance disorders, nausea, fatigue, sleep disturbance, blurred vision, sensitivity to light, hearing difficulties/loss, tinnitus, sensitivity to noise, seizure, transient neurological abnormalities, numbness, tingling	**Cognitive Symptoms:** Problems with attention, concentration, memory, speed of processing, judgment, executive control	**Behavior/Emotional Symptoms:** Depression, anxiety, agitation, irritability, impulsivity, aggression

17

Post-Concussive Symptoms

In ~15% of cases, mTBI symptoms do not diminish as expected☐ persistent post-concussive syndrome

Symptoms:

- ***No symptom unique*** to only mild TBI
- Many post-concussive symptoms occur in normal healthy individuals
- Symptoms overlap with one or more other conditions

No relationship between symptom complaints and objective findings on:

- Neuropsychological Testing
- Physical Examination
- Neurological Examination

Psychological factors likely play a large role in symptom persistence in persistent symptoms following mTBI (Mattson et al., 2019, Nelson et al., 2020, Merritt et al., 2019, Walker et al., 2023)

Some of the "symptoms" you notice may have nothing to do with your concussion or injury. See the table below for things we forget with or without a mild TBI.

Things We Normally Forget

"Symptom"	% of People
Forgets telephone numbers	58%
Forgets people's names	48%
Forgets where car was parked	32%
Loses car keys	31%
Forgets groceries	28%
Forgets why they entered a room	27%
Forgets directions	24%
Forgets appointment dates	20%
Forgets store location in shopping center	20%
Loses items around the house	17%
Loses wallet or pocketbook	17%
Forgets content of daily conversations	17%

Recovering from Mild Traumatic Brain Injury/Concussion *Page 3*

18

TBI and Comorbid PTSD

- High rates of comorbidity between TBI and mental health conditions, particularly PTSD, in Veterans
  - In Veterans with a history of mild TBI, rate of PTSD is 43.9% compared to 16.2% in those with other types of injuries and only 9.1% in those without physical injuries
  - locally, ~85% of those referred for treatment of cognitive complaints had PTSD (Jak et al., 2015)
- 13000 records of veterans screened for TBI found that over 80% of those with positive screens had psychiatric diagnoses
  - 3 times greater likelihood of PTSD
  - 2 times greater likelihood of depression
  - 2 times greater likelihood of substance use disorder (Carlson et al., 2010)

Belanger, Curtiss, Demery , Lebowitz , & Vanderploeg 2005; Belanger, Kretzmer, Vanderploeg, & French, 2009; Belanger & Vanderploeg 2005; Hoge et al., 2008; McCrea, 2008

19

Neuropsychology of PTSD

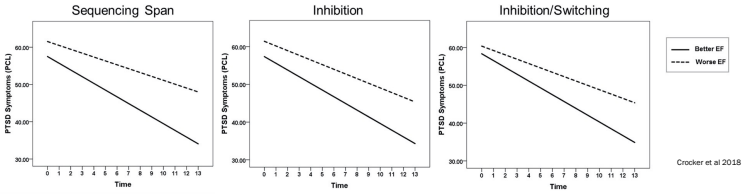
- Cognitive deficits associated with PTSD (Vasterling et al. 2002; Aupperle et al., 2011)
  - Attention
  - Learning and verbal memory
  - Working memory
  - Executive functions
- PTSD is associated with longer lasting cognitive difficulties than mTBI (Vasterling et al., 2012)
- With time and ongoing symptoms, neuronal systems in those with PTSD may become overresponsive, leading to worsening cognition over time.
  - Stress sensitization - stress leads to changes in neurotransmitter/neurohormonal responses, that can create or exacerbate PTSD symptoms

20

PTSD and Executive Functioning

Individuals who dropped out of PTSD treatment had worse baseline executive function.

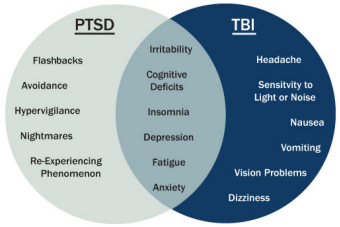
- Worse baseline executive function was associated with reduced treatment response.
- Those with worse cognitive flexibility didn't benefit as much from standard therapy.



Crocker et al 2018

21

Treatment



- High rates of comorbid conditions leads to protracted recovery in those with history of mTBI
- Iraq/Afghanistan Veterans with history of mTBI endorse more severe psychiatric symptoms and more neurobehavioral symptoms (Belanger et al., 2009; Terrio et al., 2009).
- Important to target comorbid conditions but treatments have been largely independent for TBI & PTSD and other highly comorbid conditions

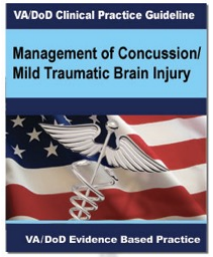
22

Treatment

VA/DoD guidelines state that co-occurring disorders should not prevent veterans from receiving empirically supported treatments for PTSD and in fact assert that treatment of mood and pain are first line treatments.

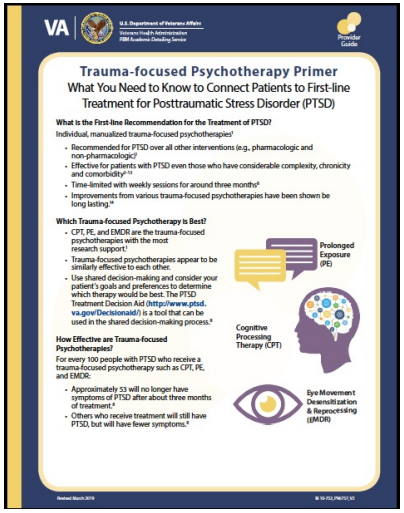
Research supports this guideline - history of TBI should not preclude trauma-focused therapies (Ragsdale & Horrell, 2016; Walter et al., 2014; Davis et al., 2013)

Nonetheless, concern remains about the ability of those with a history of TBI to participate in structured trauma-focused treatment (Cook et al., 2014).



23

PTSD Treatment



24

PTSD Treatment

- Cognitive Processing Therapy (CPT), a cognitive behavioral treatment (CBT) for PTSD
- Manualized 12-week treatment, 50 min sessions
- Focuses on identifying the content of trauma-related thoughts & beliefs and addressing their impact on emotions and behaviors
- Patients are taught to recognize and challenge thought patterns
- Themes: trust, safety, power/control, self-esteem, intimacy
- Strong empirical support for its efficacy and effectiveness

25

mTBI Treatment

Symptom-specific treatments

Psychoeducation, expectation management, cognitive rehabilitation

Practice standards for treatment of mild to moderate TBI have been organized into a manualized treatment, Cognitive Symptom Management and Rehabilitation Therapy (CogSMART).

26

Cognitive Rehabilitation

Huckans et al., 2010 ; Twamley, Jak, et al., 2014; Twamley at al., 2014

- Cognitive Symptoms Management and Rehabilitation Therapy (CogSMART)

  Manualized, 10-12 week, 1 - 2 hours per week individual or group class to teach *compensatory* cognitive strategies

- Components based on standards of practice for treatment of TBI, which include:
  - Psychoeducation & expectation management
  - Stress management & relaxation techniques
  - Cognitive strategies in memory, attention, and executive functioning

Results in :

§ Decreases in mood and post-concussive symptoms

§ Objective improvements in attention, memory, & executive functioning

27

TABLE 1 *CogSMART modules and sample strategies*

Module	Compensatory strategies and habits taught in CogSMART
Postconcussive Symptoms	1. Psychoeducation regarding the natural course of postconcussive symptoms 2. Appropriate pacing, use of routines, lifestyle strategies 3. Stress reduction (eg, progressive muscle relaxation, abdominal breathing, mindfulness, visualization, grounding) 4. Sleep hygiene education, headache management, and education regarding depression, anxiety, and PTSD
Prospective Memory	1. Daily calendar use 2. To-do lists and prioritizing tasks 3. Linking tasks; using "can't miss reminders" to cue tasks
Attention and Vigilance	1. Conversational vigilance skills (reduce distractions, eye contact, paraphrasing, and asking questions) 2. Task vigilance skills (paraphrase instructions, use self-talk during tasks to maintain focus)
Learning and Memory	1. Encoding strategies (write things down, paraphrasing/ repetition, association, chunking, categorizing, acronyms, rhymes, visual imagery, name-learning strategies) 2. Retrieval strategies (systematic searching) and organizational strategies for general learning and memory
Executive Functioning	1. Six-step problem-solving method (define problem, brainstorm solutions, evaluate solutions, select a solution, try it, evaluate how it worked) 2. Self-talk while solving problems 3. Hypothesis testing and self-monitoring

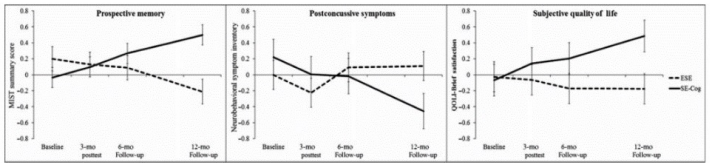
Abbreviations: CogSMART, Cognitive Symptom Management and Rehabilitation Therapy; PTSD, posttraumatic stress disorder.

28

J Head Trauma Rehabil

CogSMART Compensatory Cognitive Training for Traumatic Brain Injury: Effects Over 1 Year

Elizabeth W. Twamley, PhD; Kelsey R. Thomas, MS; Amber M. Gregory, BA; Amy J. Jak, PhD; Mark W. Bondi, PhD; Dean C. Delis, PhD; James B. Lohr, MD



29

J Head Trauma Rehabil

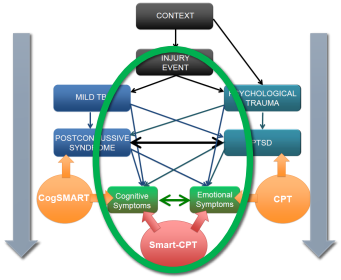
Compensatory Cognitive Training for Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn Veterans With Mild Traumatic Brain Injury

Daniel Storzbach, PhD; Elizabeth W. Twamley, PhD; Mai S. Roost, PhD; Shahrokh Golshan, PhD; Rhonda M. Williams, PhD; Maya O'Neil, PhD; Amy J. Jak, PhD; Aaron P. Turner, PhD; Halina M. Kowalski, MA; Kathleen F. Pagulayan, PhD; Marilyn Huckans, PhD

Objective: The purpose of the study was to evaluate the efficacy of group-based compensatory cognitive training (CCT) for Operation Enduring Freedom (OEF)/Operation Iraqi Freedom(OIF)/Operation New Dawn (OND) Veterans with a history of mild traumatic brain injury. **Method:** One hundred nineteen OEF/OIF/OND Veterans with history of mild traumatic brain injury participated at 3 sites, and 50 of the Veterans were randomized to CCT group, while 69 Veterans were randomized to the usual care control group. The CCT group participated in 10 weeks of CCT. Both CCT and usual care groups were assessed at baseline, 5 weeks (midway through CCT), 10 weeks (immediately following CCT), and 15 weeks (5-week follow-up) on measures of subjective cognitive complaints, use of cognitive strategies, psychological functioning, and objective cognitive performance. **Results:** Veterans who participated in CCT reported significantly fewer cognitive and memory difficulties and greater use of cognitive strategies. They also demonstrated significant improvement on measures of attention, learning, and executive functioning, which were 3 of the cognitive domains targeted in CCT. **Conclusions:** Findings indicate that training in compensatory cognitive strategies facilitates behavioral change (ie, use of cognitive strategies) as well as both subjective and objective improvements in targeted cognitive domains. **Key words:** *cognitive training, mild traumatic brain injury, OEF/OIF/OND Veterans*

30

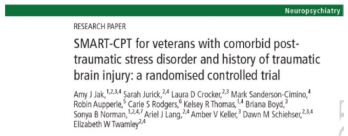
Dynamic relationship between comorbid PTSD and history of mTBI



Adapted from Vasterling, Bryant, and Keane (2012).

31

SMART-CPT



Neuropsychiatry

RESEARCH PAPER

SMART-CPT for veterans with comorbid post-traumatic stress disorder and history of traumatic brain injury: a randomised controlled trial

Amy J Jak,[1,2,3,4] Sarah Jurick,[2,4] Laura D Crocker,[2,3] Mark Sanderson-Cimino,[4] Robin Aupperle,[5] Carle S Rodgers,[6] Kelsey R Thomas,[3,4] Briana Boyd,[3] Sonya B Norman,[1,2,4,7] Ariel J Lang,[2,4] Amber V Keller,[3] Dawn M Schiehser,[2,3,4] Elizabeth W Twamley[2,4]

- Integrates compensatory cognitive rehab principles (CogSMART) into cognitive processing therapy (CPT) to target comorbid PTSD/persistent post-concussive symptoms
- Decrease fragmentation of treatment
- More time efficient for both patient and clinic: SMART-CPT takes 15 hours completed in 12 weeks vs. 24 hours completed in 12-24 weeks for CPT and CogSMART separately

32

CPT Modifications

Patients are provided written copies of session agendas and session reviews

Patient handouts include written summaries of key topics discussed orally in session

- E.g., PTSD symptoms, fight/flight/freeze, just world belief, natural vs manufactured emotions, hindsight bias, self blame, five themes

Color-coded A-B-C and challenging beliefs worksheets (CBWs) to clearly separate sections

CBWs are also simplified

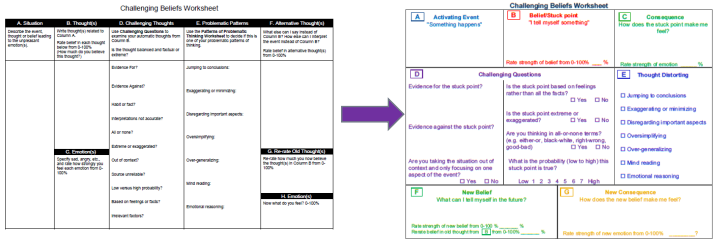
More concrete language

Repetition of key points

Built-in breaks

33

Example Worksheet Modification



34

CogSMART strategies integrated into CPT

TABLE 1 *CogSMART modules and sample strategies*

Module	Compensatory strategies and habits taught in CogSMART
Postconcussive Symptoms	1. Psychoeducation regarding the natural course of postconcussive symptoms 2. Appropriate pacing, use of routines, lifestyle strategies 3. Stress reduction (eg, progressive muscle relaxation, abdominal breathing, mindfulness, visualization, grounding) 4. Sleep hygiene education, headache management, and education regarding depression, anxiety, and PTSD
Prospective Memory	1. Daily calendar use 2. To-do lists and prioritizing tasks 3. Linking tasks; using "can't miss reminders" to cue tasks
Attention and Vigilance	1. Conversational vigilance skills (reduce distractions, eye contact, paraphrasing, and asking questions) 2. Task vigilance skills (paraphrase instructions, use self-talk during tasks to maintain focus)
Learning and Memory	1. Encoding strategies (write things down, paraphrasing/ repetition, association, chunking, categorizing, acronyms, rhymes, visual imagery, name-learning strategies) 2. Retrieval strategies (systematic searching) and organizational strategies for general learning and memory
Executive Functioning	1. Six-step problem-solving method (define problem, brainstorm solutions, evaluate solutions, select a solution, try it, evaluate how it worked) 2. Self-talk while solving problems 3. Hypothesis testing and self-monitoring

Abbreviations: CogSMART, Cognitive Symptom Management and Rehabilitation Therapy; PTSD, posttraumatic stress disorder.

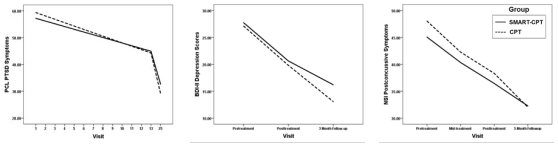
35

Participants

	Total Sample (N=100)	CPT-C (N=49)	SMART-CPT (N=51)	t, χ^2, or F (df)	p
Age, years	34.39 (7.89)	33.94 (7.27)	34.82 (8.50)	-.56 (98)	.578
Education, years	13.69 (1.83)	13.88 (1.65)	13.51 (1.98)	1.00 (98)	.317
Male, %	89.0%	87.8%	90.2%	χ^2=.15 (1)	.758
Non-Caucasian, %	53%	59.2%	47.1%	χ^2=1.48 (1)	.155
Loss of Consciousness, minutes [a]	4.50 (8.84)	5.49 (8.90)	3.61 (8.78)	1.05 (95)	.297
Number of TBIs	2.81 (1.92)	2.90 (1.99)	2.73 (1.87)	.44 (97)	.661
Percentage Service Connection	57.10 (38.70)	56.73 (37.88)	57.45 (39.84)	-.09 (98)	.927
Treatment					
Treatment Completion, %	53.0%	49.0%	56.9%	χ^2=.62 (1)	.548
Prior PTSD Treatment, %	57.0%	55.1%	58.8%	χ^2=.14 (1)	.840
Prior Cognitive Rehabilitation, %	1.0%	2.1%	0%	χ^2=1.03 (1)	.495
Total sessions completed	7.96 (4.74)	7.37 (4.95)	8.53 (4.51)	-1.23 (98)	.222
Average time per session, minutes	79.77 (19.24)	72.65 (16.06)	86.03 (19.77)	-3.53 (90)	.691
Symptom Severity					
PCL-5	59.35 (10.65)	61.06 (9.92)	57.63 (11.17)	1.61 (96)	.111
NSI	46.56 (14.12)	48.61 (14.92)	44.51 (13.10)	1.45 (96)	.151
BDI-II	27.68 (10.27)	27.29 (9.62)	28.06 (10.96)	-.37 (95)	.714
Cognitive [b]					
WRAT Reading	97.02 (10.00)	97.08 (10.63)	96.96 (9.44)	.27 (1,95)	.603
WAIS-IV Processing Speed Index	91.51 (13.21)	90.10 (15.18)	92.88 (10.93)	.22 (1,94)	.639
CVLT-II 1-5 Learning Total	45.37 (9.93)	43.35 (9.72)	47.39 (9.83)	3.25 (1,95)	.075
CVLT-II SDFR	-.54 (.96)	-.67 (.93)	-.40 (.98)	.85 (1,95)	.358
CVLT-II LDFR	-.69 (1.13)	-.86 (1.07)	-.52 (1.19)	.79 (1,95)	.376
WAIS-IV Digit Span	8.36 (2.59)	8.35 (2.53)	8.38 (2.67)	.64 (1,96)	.426
D-KEFS Trail-Making Number-Letter Switching	8.85 (2.78)	8.73 (2.77)	8.96 (2.81)	.02 (1,94)	.879
D-KEFS Color Word Inhibition	7.80 (4.04)	7.66 (4.45)	7.94 (3.65)	.05 (1,93)	.829
WCST-64 Total Errors	48.08 (8.90)	48.06 (8.93)	48.10 (8.97)	.04 (1,94)	.835
TOMM Trial 2	47.45 (4.54)	46.69 (5.29)	48.18 (3.58)	-1.65 (98)	.103
TOMM Retention Trial	46.80 (5.54)	45.94 (6.59)	47.63 (4.20)	-1.53 (98)	.128
QOLI-B General Life Satisfaction	4.07 (1.30)	4.19 (1.21)	3.96 (1.38)	.86 (95)	.390

36

Change in Mental Health and Neurobehavioral Symptoms

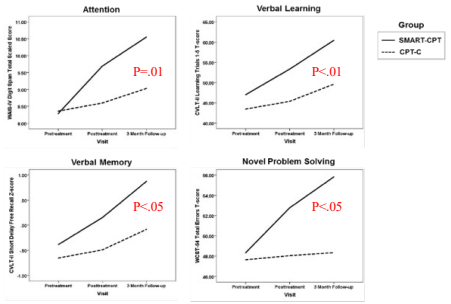


Statistically and clinically significant improvement in PTSD, depression, and postconcussive symptoms, but no group differences

Similarly, significant improvement in quality of life (general life satisfaction, daily activities, family, health), but no group differences

37

Change in Cognitive Functioning



38

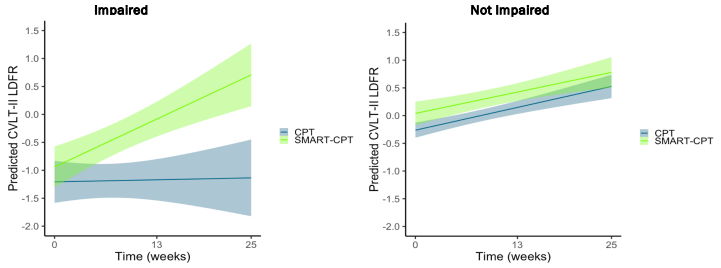
Defining Impairment

Cognitive impairment was defined as greater than 1 standard deviation below the mean on at least two tests within a cognitive domain

Attention & Working Memory	Executive Functioning	Memory	Processing Speed
• WAIS-IV Digit Span Forward • WAIS-IV Digit Span Sequencing • TMT Visual Scanning	• TMT Number Letter Switching • CWIT Inhibition Switching • WCST Perseverative Errors	• CVLT-II Short Delay Free Recall • CVLT-II Long Delay Free Recall • Rey-O Delay	• TMT Number Sequencing • WAIS-IV Coding • CWIT Color Naming

39

Change in Cognitive Functioning if Impaired at Baseline



40

Summary

Objective deficits in memory and executive functioning were the most common

Cognitive impairment did not result in higher dropout rates or limit Veterans' improvement with regard to self-reported symptoms following trauma-focused treatment

Veterans with cognitive impairment should not be excluded from such treatment.

Cognitive rehabilitation strategies boosted memory performance over standard trauma-focused treatment for those with objective cognitive impairment.

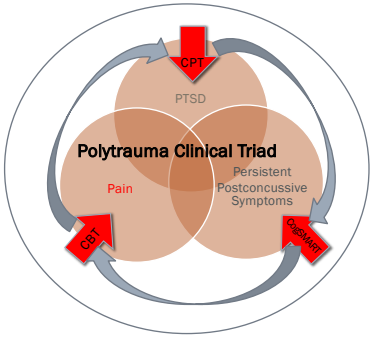
41

Summary

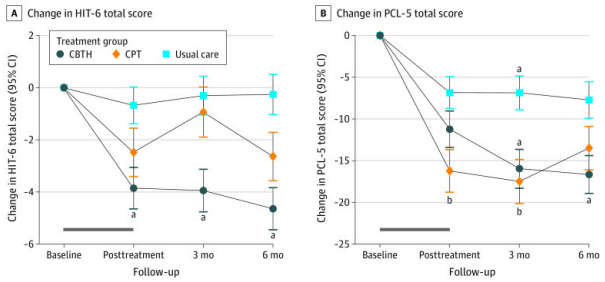
- Individuals with a history of concussion and persistent post-concussive symptoms can successfully complete structured and empirically supported mental health therapies with or without modifications
- Both CPT and SMART-CPT resulted in clinically significant reductions in PTSD and post-concussive symptomatology as well as improvements in quality of life
- Adding compensatory cognitive strategies to mental health treatment does provide differential benefit in the cognitive domains of attention, learning/memory, and novel problem solving
- SMART-CPT has the potential to defragment care and significantly improve treatment for this clinically complicated group

42

Other Comorbidities: Pain and Sleep



43



Pain and PTSD

McGeary et al., 2022

44

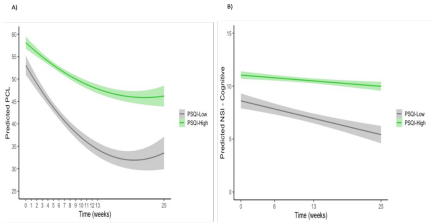
Sleep, PTSD, and mTBI

Sleep did not significantly improve following treatment

Worse baseline sleep quality was associated with:

Less improvement in PTSD symptoms

Less improvement in cognitive complaints

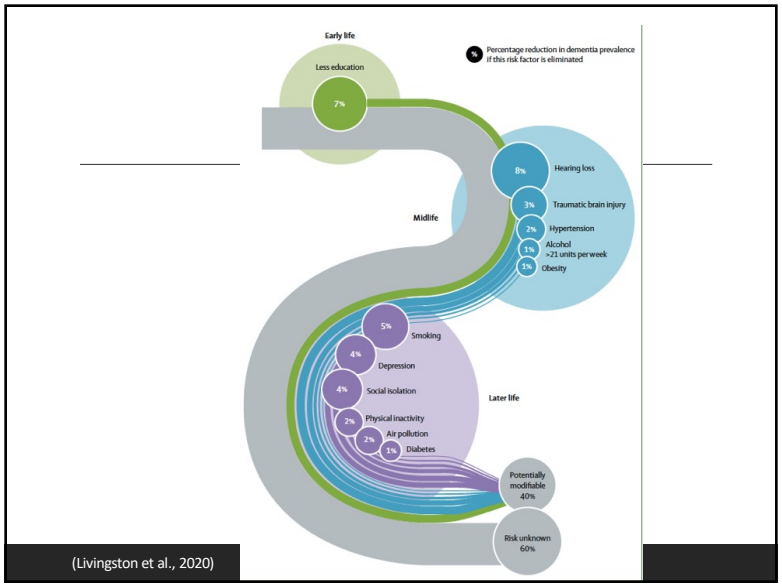


Sullan et al., 2021

45

PTSD, TBI, and risk for poor cognitive aging outcomes

46



(Livingston et al., 2020)

47

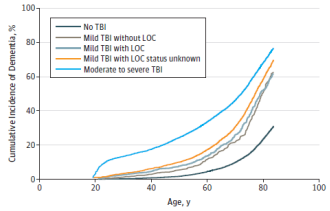
Research

JAMA Neurology | Original Investigation

Association of Mild Traumatic Brain Injury With and Without Loss of Consciousness With Dementia in US Military Veterans

Deborah E. Barnes, PhD, MPH; Amy L. Byers, PhD, MPH; Raquel C. Gardner, MD; Karen H. Seal, MD, MPH; W. John Boscardin, PhD; Kristine Yaffe, MD

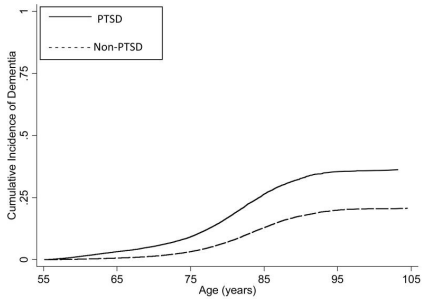
Figure. Cumulative Incidence of Dementia by Traumatic Brain Injury (TBI) Severity



The unadjusted cumulative incidence of dementia (age at dementia diagnosis) is shown as a function of TBI severity. After adjustment for demographics, medical conditions, and psychiatric disorders, there was a dose-response relationship between TBI severity and dementia diagnosis with hazard ratios of 2.36 (95% CI, 2.10-2.66) for mild TBI without loss of consciousness (LOC); 2.51 (95% CI, 2.29-2.76) for mild TBI with LOC; 3.19 (95% CI, 3.05-3.33) for mild TBI with LOC status unknown, and 3.77 (95% CI, 3.63-3.91) for moderate to severe TBI.

48

PTSD and Dementia Risk

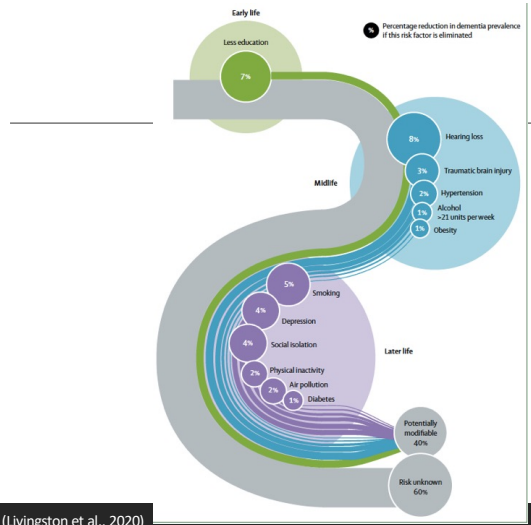


Incident Dementia

The median follow-up time for veterans with and without PTSD was 7.2 (range 0.1 to 7.4) years. Cumulative incidence rates of dementia were significantly higher for veterans with than those without PTSD. Those with PTSD had a 7-year cumulative incidence rate of 10.6% with incident dementia, whereas veterans without PTSD had a 7-year rate of 6.6% (P<.001). Incident dementia rates were higher for patients with PTSD throughout the follow-up period (Figure).

Yaffe et al., 2010

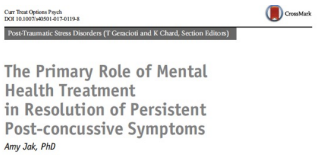
49



(Livingston et al., 2020)

50

Conclusions



- Because of the interconnectedness of PTSD and concussion in cognitive symptom presentation, integrated treatments offer great benefit to target common etiologic pathways and result in robust symptom increases in a more time efficient manner
- The evidence that multiple concussions/subconcussive blows can induce neurological changes and raise risk for poor cognitive outcomes is not incompatible with the research that indicates comorbid mental health conditions are significant contributors to functional changes and should be the primary target of treatment for persistent post-concussive symptoms.

51

Thank You

Sarah M. Jurick, PhD
Laura D. Crocker, PhD
Kelsey R. Thomas, PhD
Elizabeth W. Twamley, PhD
Robin L. Aupperle, PhD
Sonya B. Norman, PhD
Ariel J. Lang, PhD
Dawn M. Schiehser, PhD
Molly Sullan, Ph.D.
Amber Keller
Mark Sanderson-Cimino
Lilјana Trenova
Briana Boyd, Ph.D.
Nicole Deford
Victoria Merritt, Ph.D.

DoD Award Number: W81XWH-11-1-0641
ClinicalTrials.gov identifier: NCT01943162

52

Next Steps

Before You Go:

Thank you for attending and participating in our training.

Please note: Attendance cannot be taken before the webinar is closed. Please allow 2 hours for our system to track attendance.

After waiting, the next step for meeting CE requirements is to log back into your CE21 account and complete all certificate requirements for this course.

Please note that Zoom will occasionally take attendance that does not transfer to CE21. If your "Seminar Completion" tab is red, and you have attended the webinar in the required entirety, please wait 4 hours before contacting Micah Norgard at micah.norgard.ctr@usuhs.edu

CDP
Uniformed Services University

53

53